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5

The present invention relates to a method for the manufacture of a high temperature-superconducting layer on a substrate (1a, 1b) comprising the steps of depositing an $\text{RBa}_2\text{Cu}_3\text{O}_7$ -layer (2) with a low growth rate, wherein R represents yttrium, an element of the group of rare-earth elements (atomic number 57 to 71) or 10 mixtures of two or more of these elements, and the deposition of an $\text{XBa}_2\text{Cu}_3\text{O}_7$ -layer (3) onto the $\text{RBa}_2\text{Cu}_3\text{O}_7$ -layer (2) with high growth rate, wherein X represents yttrium, an element of the group of rare-earth elements (atomic number 57 – 71) or mixtures of two or more of these elements. Preferably, the low growth rate is < 1 nm/s and the high growth rate is > 1 nm/s, preferably > 2 nm/s and the 15 $\text{RBa}_2\text{Cu}_3\text{O}_7$ -layer (2) is preferably deposited onto an at least biaxially textured substrate (1a) or a substrate with an at least biaxially textured buffer layer (1b).

(Fig. 1)